Claim

What is claimed:

1. A modular construction system comprising:

an inventory of panel shapes directly related to each other by virtue of the derivation from a common format, the common format being a three dimensional grid that defines twenty-seven subcubes within a larger single cube, by connecting all the vertices within the grid in all possible combinations; and

a means for connecting the panel shapes to each other in a manner that accounts for panel thickness and multiple combinations in numbers and angles with respect to each other about axes centered between the sides of panels being joined, between vertices occurring at corners of panels being joined, and in multiple numbers and combinations about these vertices without the need for customized deviations from the fundamental design and application of these linkages, regardless of complexity.

2. The modular construction system of Claim 1 wherein the inventory of panel shapes are able to be combined so as to form a variety of simple polygons, including cubes, tetragonal primitives, orthorhombic primitives, isosceles prisms, right triangular prims, trirectangular tetrahedrons and right square pyramids, all of which have useful applications in spatial and structural designs.

3. The modular construction system of Claim 1 wherein the inventory of panel shapes are not limited to the formation of simple polygonal based structures can be combined in almost limitless ways for creating architectural space.

4. The modular construction system of Claim 1 wherein the inventory of panel shapes can be combined in the multiplicity of combinations about both axes and vertices common to panels being joined is made possible by maintaining a space between panel sides, coincident with strut locations, and corners of panels or strut junctions of like panels or strut assemblages, so as not to crowd the vicinity of axes and vertices about which panels or strut assemblages are being joined

5. The modular construction system of Claim 1 wherein the panels are carried by struts which define their perimeters and which may be integral with and concealed by the panel assemblage.

6. The modular construction system of Claim 5 wherein the panels may be omitted from the struts defining panel shapes revealing a structural framework which may be either left open or infilled with various optional architectural or decorative materials.

7. The modular construction system of Claim 1 wherein the inventory of panel shapes are connected through the use of at least two joinery assembly systems along panel sides and at panel corners, corresponding to axes parallel and common to the sides of the panels being joined, and terminating at vertices centered equidistant between the corners of the panels being joined.

8. The modular construction system of Claim 7 wherein the joinery assemblies are located in the space between the panel sides and the corners panel and include an open-ended cylinder segment of tubing centered on axes spanning between the vertices equidistant and parallel to the sides of the panels being joined.

9. The modular construction system of Claim 7 wherein the joinery assembly at the panel corners comprises a plurality of flat structural planes, called webs, which bridge the gap between the panel side or the strut side, to which it is rigidly fixed along the centerline, and the open-ended cylinder-tubular segment to which it is anchored by means of independent collars with tab extensions which embrace both the cylinder and the web, to which it is conventionally bolted.

10. The modular construction system of Claim 9, wherein the joinery assembly occurring at the corners of panel-strut assemblies, creates a structural tie between the corners of the panels being joined in a manner which forms a structural unit called a hub, without occupying space at or about the vicinity of the vertice common to the corners of the panels or struts being joined.

11. The modular construction system of Claim 10 wherein the space provided between the panel corners provides for unobstructed passage of wires or other utility lines from panel to panel throughout a structure comprising a plurality of joined panels.

12. The modular construction system of Claim 10 wherein the space provided between the panel corners provides a convenient location for the placement of a structural node, facilitating easy linkage with a strut-node space framing system.

13. The modular construction system of Claim 10, wherein the joinery assemblies provide for easy connection with conventional construction materials.

14. The modular construction system of Claim 7 wherein the second joinery assembly includes a bracket that bridges the gap between the panel-strut sides.

15 The modular construction system of Claim 14 wherein the flat planer element bridges the panel-strut sides and the tubular element centered on the axis between parallel panel-strut sides, and is mounted perpendicular to the flat planer element and the tubular element to prevent lateral displacement or flexure between the flat planer element and the tubular element, which maintains the axis centerline between the panels and the centerline of the panel thickness that is fixed and parallel with respect to each other.

16. The modular construction system of Claim 14, wherein the bracket is bolted directly to the brackets of other panels to lock the panels in place with respect to each other.

17. The modular construction system of Claim 4 wherein the space between the panel sides and strut assemblies is maintained by means of brackets to, provide for wiring or other utility lines.

18. The modular construction system of Claim 1 wherein the inventory of panel shapes provides a convenient diversity of panel shapes and sizes for configuring a building design the assembly of panels.